

## 1.1

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SESSION Session 1: satellite tracking and scheduling

TYPE Poster

TITLE The Progress and developments of Shanghai SLR station

### ABSTRACT

Through technical researches and system improvements, the performance of Shanghai kHz repetition rate SLR system has been greatly enhanced. The SLR data quality has been improved persistently, which reaches ILRS guidelines at the field of long and short stability since 2015 and the efforts for further strengthening SLR data stability are still made in order to establish the top-level SLR system. Updating 1kHz laser system, the 4kHz repetition rate laser pulse is setup and applied in the routine SLR measurements, which has increased the amount of laser data and the precision of normal points and make more positive impacts on measuring the spin parameters of laser spherical satellites. At the aspect of laser tracking space debris and the technical analysis of higher stability laser time transfer, the propulsive achievements has been made based on Shanghai SLR system. For further widening the applications of SLR system and improving system performance, the development and experiments of new technologies and novel devices are underway at Shanghai SLR station, including near infrared wavelength (1.064um) SLR technology, methods for increasing detection ability based on multi-telescopes and Superconducting Nanowire Single Photon Detector (SNSPD) with high performance.

## 1.2

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SESSION Session 1: satellite tracking and scheduling

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TITLE Satellite Laser Ranging with 4 kHz Repetition Rate and Its Application

### ABSTRACT

There is a technological tendency for improving the performance of SLR system by increasing the working frequency. In 2013, Shanghai Astronomical Observatory (SHAO) breakthrough SLR technology to realize 10 kHz repetition rate laser ranging in the first time. For balancing the detection capability and performances, SHAO put forward and established a routine 4 kHz SLR system by using a civil laser with power of about 2.5 watts, 50ps pulse width and M2 of  $\sim 1.2$  since 20th of July this year. For the new 4 kHz SLR system, precision of calibration ground target is about 5-8mm, and all the ILRS satellites had been successfully measured with higher precision of NPTs and high data density per pass by comparing with our 1 kHz SLR system. The paper also showed the exciting result of measuring rotation rate of satellites by applying 4 kHz laser data.